REMARKS

A total of 41 claims remain in the present application. The foregoing amendments are presented in response to the Office Action mailed January 26, 2004, wherefore reconsideration of this application is requested.

By way of the above-noted amendments, the specification has been amended to correct the deficiencies identified by the Examiner at paragraph 7 of the Detailed Action. Claims 1, 5, 19, 22, 31 and 32 have been amended to more explicitly define features of the present invention. In particular, claim 1 has been amended to define that the "input data signal [has] a user selected variable concatenation", and that the "input signal [is split] into a plurality of derived signals independently of the concatenation of the input data signal". Similar amendments have been effected in independent claims 19 and 31, and consequential amendments effected in claims 5, 22 and 32. Finally, claims 17, 18, 39 and 41 have been amended to address the Examiner's rejections under 35 USC § 112.

In preparing the above-noted amendments, careful attention was paid to ensure that no new subject matter has been introduced. In particular, the originally filed specification states that:

> "The OP-N connection is "concatenatable", in that an end user can transport arbitrarily concatenated signal traffic through the OP-N connection. ... The traffic mixture (i.e., the mix of concatenated and non-concatenated traffic) within the OP-N connection can be selected by the end user to satisfy their requirements, and may be changed by the end user as those requirements change, without requiring re-configuration of the OP-N connection. For example, with an OP-6O connection ... an end user could arbitrarily change from a traffic mix of five STS-12c signals to one OC-48c and 12 (unconcatenated) STS-1 signals or two STS-24 and two STM-4 signals as required. Other traffic combinations are also possible, all at the discretion of the end user, and without intervention from a network service provider." (See page 1 line 26 through page 2, line 18, underlining added)

and

" In the illustrated embodiment, the hyper-concatenated connection 24 is an OP-192 connection, thus having a bandwidth equivalent to N = 192 STS-1 signals. Within this connection, signal concatenation is not provisioned, so that an arbitrary concatenation scheme ... can be defined by an end user." (Page 16, lines 19-26, underlining added)

Thus the originally filed specification explicitly states that the concatenation of traffic within the OP-N connection is arbitrarily selected by the end-user, and can be arbitrarily changed by the end user without intervention by the network service provider. Thus it will be clear that the traffic mixture within the OP-N connection is "user-selected" and "variable". Clearly, this user-selected and variable concatenation extends to the input signal recieved at a start node of an OP-N connection, and the output signal reconstructed by the end node of the OP-N connection. Thus: at Page 25, lines 4-6:

"As noted above, the high bandwidth signal (STS-Kc) received from the communications device 16a may contain an arbitrary, dynamic mix of concatenated data traffic." (underlining added)

In light of the foregoing, it is believed that amendments in the claims and specification to emphasize that the input (and output) data signals have a "user-selected variable concatenation" is fully supported by the originally filed specification, and does not introduce new subject matter.

As is described in detail at pages 21-29, the input signal (STS-Kc) is split into Q derived STS-Mc signals of M frames each. Thus:

The high bandwidth signal 42 originating from the end user's communications device 16a is a SONET STS-Kc signal composed of 192 concatenated STS-1 frames (thus K=192), which are nominally identified as F(1)-F(192). This high bandwidth signal 42 is split by the signal processor 32 into four derived SONET signals 44a – 44d, each of which includes 48 of the STS-1 frames.

> Thus, in the example of Fig. 3, each derived signal is a derived STS-Mc signal, in which M=48. (Page 23, lines14-22)
>
> Thus constructed, each derived signal 44 is indistinguishable from a standard SONET/SDH signal STS-M signal (M=48 in this example), and each derived signal may be routed through independent pointer processors, even through independent optical fibers provided that the signal skew at the end node 18b is within certain predefined tolerances. (Page 29, lines10-16)

The skilled artisan will immediately recognize that, since the input signal is arbitrarily concatenated, and each derived signal is a derived SONET STS-Mc signal, it follows that the derived signals must necessarily be transported through the hyper-concatenated connection "independently of the concatenation of the input data signal", notwithstanding the fact that these specific words do not appear in the originally filed specification. Thus it is submitted that amendments in the claims and specification to emphasize that the input signal is split into derived signals independently of the concatenation of the input data signal does not introduce new subject matter.

Referring now to the text of the Office Action:

- claims 17, 18, 39 and 41 stand objected to under 35 U.S.C. § 112 as failing to distinctly claim the subject matter of the present invention;
- claims 1, 2, 5, 19-24, 28, 31-33, 38 and 40 stand rejected under 35 U.S.C. § 102(b), as being unpatentable over the teaching of United States Patent No. 5,461,622 (Bleickardt);
- claims 3, 4, 39 and 41 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over the teaching of United States Patent No. 5,461,622 (Bleickardt);
- claims 6, 7, 13 and 37 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over the teaching of United States Patent No. 5,461,622 (Bleickardt)

as applied to claims 1, 5 and 33, and further in view of United States Patent No. 5,537,405 (Yoshifuji);

- claims 8 and 9 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over the teaching of United States Patent No. 5,461,622 (Bleickardt) in view of United States Patent No. 5,537,405 (Yoshifuji) as applied to claims 1, 5 and 33, and further in view of United States Patent No. 6,094,440 (Sugawara et al.);

- claims 14-18 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over the teaching of United States Patent No. 5,461,622 (Bleickardt) in view of United States Patent No. 5,537,405 (Yoshifuji) as applied to claim 13, and further in view of United States Patent No. 5,257,261 (Parruck et al);

- claims 35 and 36 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over the teaching of United States Patent No. 5,461,622 (Bleickardt) as applied to claim 33, and further in view of United States Patent No. 5,257,261 (Parruck et al); and

- claims 10-12, 25-27 and 29-30 are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As an initial matter, applicant appreciates the Examiner's indication of allowable subject matter in claims 10-12, 25-27 and 29-30. The Examiner's rejections of claims 1-9, 13-24, 28 and 31-41 are believed to be traversed by the above-noted claim amendments, and further in view of the following discussion.

The Examiner's comments at paragraphs 1-6 of the detailed action are well taken. Accordingly, independent claims 1, 19 and 31 have been amended to explicitly define features of the hyper-concatenated connection, and the hyper-concatenated data streams, which define over the known prior art. In particular, as described above, the originally filed specification teaches that the high data-rate (STS-K) input signal has an arbitrary and variable concatenation that is defined (and can be changed) by the end-user. Furthermore, the hyper-concatenated data

streams are composed of derived SONET STS-Mc signals which necessarily have a concatenation scheme that is independent of that of the input signal. As described at pages 21-29 of the specification, the process of splitting the input data signal into the Q derived signals of M frames each is, in essence, a process of reversibly converting a user-defined arbitrary (and arbitrarily variable) concatenation scheme into a fixed concatenation scheme for transport across the network. The independent claims have been amended to emphasize this characteristic of the present invention.

None of the known prior art teaches or suggests the features of amended claims 1, 19 and 31. With respect to United States Patent No. 5,461,622 (Bleickardt), Applicant appreciates the Examiner's observation that the system of Bleickardt can accommodate different concatenation schemes. In this sense, the Examiner is correct in stating that Bleickardt can receive an "arbitrary" rate signal. However, Applicant reiterates their belief that, in the system of Bleickardt, the concatenation scheme of the input signal must be known (by the network service provider) in advance, so that the appropriate inverse-multiplexing and multiplexing operations can be set up within the end-nodes. In this sense, the concatenation scheme is not arbitrary at all, but rather is predetermined, or at least pre-arranged. This is entirely different from, and in no way suggests, the methods and systems of the present invention, in which the concatenation scheme of the input signal is defined and changeable by the user, and thus unknown to the network service provider.

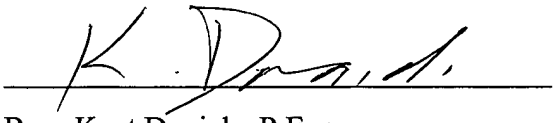
United States Patent No. 5,461,622 (Bleickardt) does not teach or suggest a system capable of receiving an "input data signal having a user selected variable concatenation", as defined in the amended claims. Furthermore, Bleickardt does not teach or suggest a system capable of splitting such an input signal into "a plurality of derived signals independent of the concatenation of the input data signal" as defined in the amended claims. None of the known prior art provides the missing teaching.

In light of the foregoing, it is respectfully submitted that the presently claimed invention is clearly distinguishable over the teaching of the cited references, taken alone or in any combination. Thus it is believed that the present application is in condition for allowance, and early action in that respect is courteously solicited.

If any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 19-5113.

Respectfully submitted,

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